

OIL ANALYSIS REPORT

Sample Rating Trend









DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

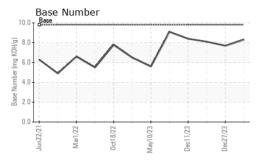
Fluid Condition

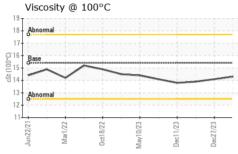
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date Client Info 28 Mar 2024 27 Dec 2023 21 Dec 2023 22 Dec 2023 21 Dec 2023	<u> </u>		Jun2021	Mar2022 Oct2022	May2023 Dec2023 D	ec2023	
Sample Date Client Info 28 Mar 2024 27 Dec 2023 21 Dec 2023 22 Dec 2023 21 Dec 2023	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 14467 13991 13991 13991 13991 13991 13991 13991 139924 13924 1	Sample Number		Client Info		GFL0117653	GFL0105792	GFL0105764
Oil Age hrs Client Info 13924 13924 13924 13924 NAC Changd NA NA Not Changd NA NORMAL NOR Changd NORMAL NOR Changd NORMAL NOR Changd NORMAL NORMAL NORMAL	Sample Date		Client Info		28 Mar 2024	27 Dec 2023	21 Dec 2023
Oil Changed Client Info Not Changd N/A Not Changd NORMAL NORM	Machine Age	hrs	Client Info		14467	13991	13991
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2	Oil Age	hrs	Client Info		13924	13924	13924
Fuel	Oil Changed		Client Info		Not Changd	N/A	Not Changd
Fuel WC Method S3.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imitibase current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 <1 <1 Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 2 1 1 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >15 0 <1 0 Vanadium ppm ASTM D5185m >15 0 <1 0 Vanadium ppm ASTM D5185m 0 3 0	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 6 7 4 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>90	6	7	4
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 2 1 1 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1 3 <1 Tin ppm ASTM D5185m >15 0 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 0 3 Barium ppm ASTM D5185m 0 0 0 <1 bistory1 history2 Boron ppm ASTM D5185m 0 0 0 <1 0 <1 Molydenum ppm ASTM D	Nickel	ppm	ASTM D5185m	>2	0	1	<1
Aluminum ppm ASTM D5185m >20 2 1 1 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1 3 <1 Tin ppm ASTM D5185m >15 0 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 0 3 Barium ppm ASTM D5185m 0 0 0 <1 history1 history2 Boron ppm ASTM D5185m 0 0 0 <1 0 <1 Maparesium ppm ASTM D5185m 0 <1 0 <1 0 <1 Calcium ppm ASTM D5185m 1070 1026 1127 1029 P	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 <1 3 <1 Tin ppm ASTM D5185m >15 0 <1	Aluminum	ppm	ASTM D5185m	>20	2	1	1
Tin ppm ASTM D5185m >15 0 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 0 3 Barium ppm ASTM D5185m 0 0 0 <1 Molybdenum ppm ASTM D5185m 0 <1 0 <1 Molybdenum ppm ASTM D5185m 0 <1 0 <1 Mangaesium ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1070 1026 1127 1029 Calcium ppm ASTM D5185m 150 1031 1017 1094 Zinc ppm ASTM D5185m 1270 1225	Lead	ppm	ASTM D5185m	>40	0	0	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 0 3 Barium ppm ASTM D5185m 0 0 0 -1 Molybdenum ppm ASTM D5185m 0 56 57 58 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 933 979 901 Calcium ppm ASTM D5185m 1070 1026 1127 1029 Phosphorus ppm ASTM D5185m 1270 1225 1230 1264 Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current history1<	Copper	ppm	ASTM D5185m	>330	<1	3	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 0 3 Barium ppm ASTM D5185m 0 0 0 -1 Molybdenum ppm ASTM D5185m 0 -1 0 -1 Magnesium ppm ASTM D5185m 0 -1 0 -1 Magnesium ppm ASTM D5185m 1010 933 979 901 Calcium ppm ASTM D5185m 1070 1026 1127 1029 Phosphorus ppm ASTM D5185m 1170 1031 1017 1094 Zinc ppm ASTM D5185m 1270 1225 1230 1264 Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current	Tin	ppm	ASTM D5185m	>15	0	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 56 57 58 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 933 979 901 Calcium ppm ASTM D5185m 1070 1026 1127 1029 Phosphorus ppm ASTM D5185m 1150 1031 1017 1094 Zinc ppm ASTM D5185m 1270 1225 1230 1264 Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m 9 2 11 0 0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7624 <	Boron	ppm	ASTM D5185m	0	3	0	3
Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 933 979 901 Calcium ppm ASTM D5185m 1070 1026 1127 1029 Phosphorus ppm ASTM D5185m 1150 1031 1017 1094 Zinc ppm ASTM D5185m 1270 1225 1230 1264 Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624	Barium	ppm	ASTM D5185m	0	0	0	<1
Magnesium ppm ASTM D5185m 1010 933 979 901 Calcium ppm ASTM D5185m 1070 1026 1127 1029 Phosphorus ppm ASTM D5185m 1150 1031 1017 1094 Zinc ppm ASTM D5185m 1270 1225 1230 1264 Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m 9 2 11 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	56	57	58
Calcium ppm ASTM D5185m 1070 1026 1127 1029 Phosphorus ppm ASTM D5185m 1150 1031 1017 1094 Zinc ppm ASTM D5185m 1270 1225 1230 1264 Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m 9 2 11 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION *ASTM D7414	Manganese	ppm	ASTM D5185m	0	<1	0	<1
Phosphorus ppm ASTM D5185m 1150 1031 1017 1094 Zinc ppm ASTM D5185m 1270 1225 1230 1264 Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m 9 2 11 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base </td <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <th>933</th> <td>979</td> <td>901</td>	Magnesium	ppm	ASTM D5185m	1010	933	979	901
Zinc ppm ASTM D5185m 1270 1225 1230 1264 Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m 9 2 11 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Calcium	ppm	ASTM D5185m	1070	1026	1127	1029
Sulfur ppm ASTM D5185m 2060 3378 2921 3052 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m 9 2 11 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Phosphorus	ppm	ASTM D5185m	1150	1031	1017	1094
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m 9 2 11 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Zinc	ppm	ASTM D5185m	1270	1225	1230	1264
Silicon ppm ASTM D5185m >25 4 4 6 Sodium ppm ASTM D5185m 9 2 11 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Sulfur	ppm	ASTM D5185m	2060	3378	2921	3052
Sodium ppm ASTM D5185m 9 2 11 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Silicon	ppm	ASTM D5185m	>25	4	4	6
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Sodium	ppm	ASTM D5185m		9	2	11
Soot % % *ASTM D7844 >6 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Potassium	ppm	ASTM D5185m	>20	1	0	0
Nitration Abs/cm *ASTM D7624 >20 7.2 6.9 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.8 19.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Soot %	%	*ASTM D7844	>6	0.3	0.4	0.3
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Nitration	Abs/cm	*ASTM D7624	>20	7.2	6.9	7.0
Oxidation Abs/.1mm *ASTM D7414 >25 15.0 15.1 15.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.8	19.2	18.8
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.3 7.7 8.1	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.0	15.1	15.6
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.3	7.7	8.1



OIL ANALYSIS REPORT

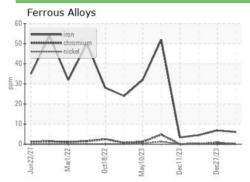


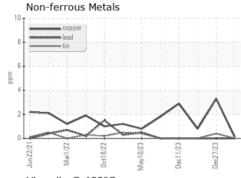


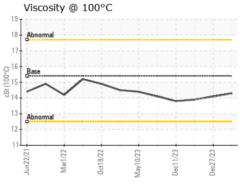
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

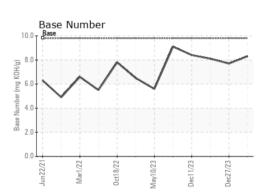
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.1	13.9

GRAPHS













Certificate L2367

Laboratory Sample No.

: GFL0117653 Lab Number : 06134433 Unique Number: 10953898 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 01 Apr 2024 **Tested** : 02 Apr 2024

Diagnosed : 02 Apr 2024 - Wes Davis

GFL Environmental - 415 - Michigan East

6200 Elmridge Sterling Heights, MI US 48313

Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)